

## Clinical RESEARCH

# Title: Clean Birth Kits: To improve birth practices and stagnant maternal mortality rate in developing Countries.

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### Background:

The current Maternal mortality rate (MMR) in Pakistan is 186/100,000 live births in 2020 in Pakistan. However, the rate in Baluchistan is 298/100,000, which is unacceptably high. Baluchistan also ranks lowest in most of the MCHN indicators. Moreover, deliveries assisted by skilled birth attendants are only 38 percent. One of the main reasons for these high numbers is that more than 70% of mothers deliver their babies at home with the help of a traditional birth attendant.

This data indicates that there is an urgent need to support the mothers having their babies at home.

APPS Europe had been passionate about reducing maternal and newborn mortality rates in Pakistan, Particular in Baluchistan. The clean birth kit distribution project was initiated in Baluchistan with an aim to reduce the deaths of mother due to sepsis and post-partum hemorrhage and to reduce newborn deaths due to sepsis. The Association of Pakistani Physicians and Surgeons (APPS) Europe have been working together to improve maternal and child health in Pakistan. Clean birthing kits (CBK) are an effective tool in improving maternal and neonatal health outcomes in low-resource settings. <sup>1</sup>APPS Europe had an extensive campaign to raise awareness about this project so that everyone can do their part in saving the mothers and babies of Baluchistan.

### Results:

The distribution of outcomes by % for 1000 births using clean birthing kits is shown in the table above. Most women (57.4%) had 4 or more ANC visits, and most (76.4%) gave birth at term (>37 weeks gestational age). The percentage of live births was high (91.3%), while 8.7% of births resulted in stillbirth or an IUD. 81.3% of births had a birth weight over 2.5 kg, whereas 18.7% of deliveries had a birth weight under 2.5 kg. There were only 0.8% of women who had PPH, and there were no problems utilizing the CBK or expired pharmaceutical products.

### Conclusion:

The distribution of 5000 CBKs in Baluchistan has shown promising outcomes with no reported cases of complications related to childbirth or the use of CBKs. However, efforts to improve access to and utilization of antenatal care services should continue to ensure optimal maternal and child health outcomes in the region. Further research is needed to explore the proportion of preterm births and low birth weight infants among those who received CBKs.

**Keywords:** Developing countries, Clean Birthing kits (CBK), maternal mortality, Obstetric hemorrhage, Sepsis

## Introduction

The Association of Pakistani Physicians and Surgeons (APPS) Europe have been working together to improve maternal and child health in Pakistan. Clean birthing kits (CBK) are an effective tool in improving maternal and neonatal health outcomes in low-resource settings.<sup>1</sup>

The current Maternal mortality rate (MMR) in Pakistan is 186/100,000 live births in 2020 in Pakistan. However, the rate in Baluchistan is 298/100,000, which is unacceptably high. Baluchistan also ranks lowest in most of the MCHN indicators. Moreover, deliveries assisted by skilled birth attendants are only 38 percent. One of the main reasons for these high numbers is that more than 70% of mothers deliver their babies at home with the help of a traditional birth attendant.

This data indicates that there is an urgent need to support mothers having their babies at home.

The poor maternal care affects directly on the unborn baby and the newborn also. It is due to this reason that Pakistan in number three in the world for the highest rates of newborn deaths. This is according to a latest WHO report published in 2021.<sup>2</sup>

As part of the effort to improve the maternal and newborn mortality in Baluchistan, APPS Europe donated 5,000 Clean Birthing Kits (CBKs) to different organizations in Baluchistan to improve maternal and child health. The kits were distributed with the help of different organizations including Institute for Development Studies and Practices (IDSP - Pakistan), Lions Club, Madat Baluchistan & Alkhidmat Pakistan. The kits were funded by APPS UK, APPS Middle East, APPS Europe, and some other partners.

### Clean birthing Kit Distribution Project

APPS Europe is a medical charity working to save lives through providing health and medical research. APPS Europe is a medical charity working to save lives through providing healthcare, resources and medical research.

This non-profit organization was founded to eradicate diseases and combat sub optimal and under resourced healthcare in Pakistan. The charity has volunteer doctors who treat underprivileged, non-affording patients, free of charge.

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## CLEAN BIRTHING KITS

Clean birth practices, combined with monitoring and active third stage management, may prevent up to 23% of maternal deaths in low-income countries (Reference 3 and 4) Achieving a clean birth requires the application of skills by the care provider and access to essential supplies. For several decades clean birth kits (CBKs) have been recommended as a means of ensuring those supplies. The World Health Organization (WHO) has supported CBK use as a means by which to explicitly “strengthen standards of cleanliness” in home deliveries V (Reference 5) and within health facilities that lack the capacity to sterilize equipment (Reference 6) A recent systematic review found CBKs to appear to be a promising strategy to reduce maternal and neonatal morbidity and mortality. (Reference7).

## The Project

APPS Europe decided to provide 5000 CBK to pregnant women in Baluchistan planning to have a home birth in a very poor socioeconomic setting.

Clean Birthing Kits (CBKs) contain essential items and medicines for conducting a delivery at home. The CBKs follow World Health Organization (WHO) principles for a sterilized and sanitary delivery with a dedicated newborn umbilical cord care. It also contains a life-saving medicine, which will prevent excessive bleeding after the delivery of the baby thus preventing post-partum hemorrhage, which is a major killer for impoverished mothers. CBK helps reduce life-threatening infection for babies and excessive blood loss in mothers.

The kits were assembled locally according to the WHO guidelines and were distributed in Baluchistan through the local partners.

APPS Europe is to ensure that the birthing kits developed should be medically approved with proper guidelines & instructions on how to use them. These kits will be sealed to ensure the integrity of the contents. Unsealed kits will not be accepted or delivered. APPS will ensure that the equipment used in the birthing kits is properly sterilized & ready to use.

APPS Europe assures that all consumables used in the birthing kits are original, legal & do not require any specific licenses for distribution as stated by the laws of Pakistan.

**APPS approached four organizations to take the responsibility of delivering these birth kits.**

**1: IDSP**

**2: Lions Club**

**3: Madat Baluchistan**

**4: Alkhidmat Foundation-Pakistan**

## **1. Institute of Development Studies and Practices IDSP-Pakistan**

The Institute of Development Studies and Practices in Pakistan (IDSP Pakistan) was founded in 1998 by Dr Quratulain Bakhtiar after she experimented in two parallel development studies courses in Quetta, the capital city of Balochistan and Lahore, the capital city of Punjab. Dr Bakhtiar after earning her B.A. degree as a student between 1978 and 1982, she worked as a volunteer, organizer, and researcher in the squatter settlements in and around Karachi. She made major contributions both to public health and sanitation during this time, providing toilets to 5,000 households through community actions, effectively changing the sanitation and hygiene practices for more than 35,000 people from 1979 to 1987. After completing her B.A. degree, she helped new refugees coming from Bangladesh by providing them with access to basic health care and education. Later, she earned a master's degree and Ph.D. and established 2,000 government girls' primary schools in rural Balochistan, resulting in the enrollment of 200,000 girls — a record in Pakistan's history.

Frustrated with a lack of efficacy in internationally sponsored development projects, she wrote a concept paper that became the blueprint for Institute for Development Studies and Practices (IDSP), and was subsequently funded by The Asia

Foundation for three years. She formulated the curriculum, recruited, and trained faculty in advance of the formal launch of IDSP in 1998.

Since then, she has focused her attention on safe spaces for young people in Pakistan, and IDSP has set a major strategic goal of establishing a university of its kind in the field of community development to work with marginalized youth for a greater social, political and economic change in societies. Currently, IDSP is designing its university curriculum and faculty development training in conjunction with the campus construction in Quetta. Dr Quratulain is an Ashoka's Fellow and has spoken at prestigious conferences, including the Global Philanthropy Forum and TEDx.

Balochistan was the epicenter of development agencies, organizations, and donors but it lacked professionally

trained local human resources. Since its establishment, IDSP has continued conducting development studies courses, and mainstreaming gender in development studies courses, leadership courses and faculty development courses. IDSP basically functions as an open learning space for the young majority population to empower them for generating and regenerating responses to the existing challenges. It engages youths in courses on critical thinking and leadership, as well as professional development to shape a meaningful career path for them.

The IDSP's campus of the University of Community Development [UCD] has facilities for both residential and non-residential courses. The separate hostels for girls and boys are well equipped to accommodate a maximum of 30 learners at a time. The hostels are equipped with security systems, CCTV cameras, INTERNET, solar geysers, common mess with common kitchens, and separate kitchens in each block, along with study areas are available. IDSP's library with more than 6000 books and other educational materials have some unique features. There is a specific study area in the library. A room in the library is reserved for reference material where study reports, evaluation reports, case studies, project reports, reflection and analytical papers, articles, learners' diaries and folders of various courses and projects are available to readers and researchers. A computer lab is also available with laptops and continuous internet and electricity. Learners compile their assignments and write their diaries and research papers in the lab. They watch documentaries, access virtual lectures, do research and exploration concerning their ideas. Solar-power and wind turbines provide electricity in all areas of the campus.

There are three conference halls for large seminars, conferences, workshops, sessions, etc. There are four classrooms available for classes/training and workshop sessions that can accommodate at a time of approximately 200 participants. Meeting rooms for individual or group meetings are also available. Biogas for cooking has been installed.

The IDSP Campus is located amidst the beautiful natural scenery of Hanna Urak valley in Quetta. The campus is close to Hanna Lake and it has a walking track, a playground for sports, and a spacious open space with mountain tracks. IDSP decided and passed the proper resolution to establish the University of Community Development (UCD) on 25th of December 2020 because of the outcomes of its overall Development Studies Course.

**Programs of IDSP's university of Community Development**

## 1. CONTINUING MEDICAL EDUCATION FOR COMMUNITY MIDWIVES

- Baluchistan's serious maternal and infant mortality rate is considered the highest in the country. A good number of certified community midwives exist but are unable to practice the midwifery profession due to lack of practical experience, confidence, and new knowledge.
- To develop professionally skilled, self-confident and capable human
- resource, IDSP created the Continuing Medical Education Course which is conducted at Qatar Hospital Karachi for Pakistan Nursing Council's (PNC) certified community Midwives, LHVs deployed, employed, inactive and self-employed.
- In 2021 IDSP has trained 10 midwives and each midwife was helped and supervised in conducting over 359 deliveries in the labor room of Qatar Hospital.
- This intensive labor room's practices unleashed their confidence by overcoming their fear of touching a mother in the labor room and going through the whole process of childbirth at home all alone on her own in the remote communities of Baluchistan.
- The identities of CMWs/LHVs are being recognized as young community leader. The course is instrumental in reducing the MMR and IMR and supporting mothers and newborns to live a healthy life.

## 2. MIDWIFERY LEADERSHIP IN COMMUNITY DEVELOPMENT

- CMWs are the backbone of the health care system, especially in the context of Baluchistan's remote and far-flung areas, where no medical help is possible in case of antenatal, delivery, or postnatal emergency.
- This critical and serious need and challenge make the CMW as the only Resource for help. However, CMWs can be efficient and effective only if they are well equipped with professional skills and knowledge of their field. The idea of IDSP's Midwifery Leadership in Community Development is based on this belief and its focus is to empower CMWs and polish their professional and leadership skills in community health care. These midwives will go through different modules on maternal and newborn healthcare, community health and communicable diseases such as Tuberculosis (TB), Hepatitis B and C, malaria, HIV AIDS, Lactation, Fistula and so on. Every month, a weekly training on one of modules is designed and delivered by experienced professionals and doctors from health institutes.
- The weekly training sessions every month are

followed by a practice- based phase of 3 weeks by midwives at the community level with the assistance of IDSP's faculty and the trainers.

- Each CMW/fellow is bound to transfer her newly gained knowledge and skills to 5 more health workers or midwives of her district.

### List of 7 Modules:

1. Social mapping and prioritizing needs and issues of Midwives, her family.
2. Antenatal Care
3. Postnatal Care
4. Breast feeding.
5. Family planning.
6. Hepatitis B/ C prevention and cure
7. Communication, (Midwives own health care support and connection)
8. Documentation power on data analysis
9. Covid-19 prevention and cure

## 3. FOUNDATION PAPER OF UCD

First, we must go back to the idea of writing the document on the UCD, it has been decided on the eve dated 25<sup>th</sup> December, where IDSP has been declared into proper functioning university named: University of Community Development UCD. Foundation Paper consists of several areas, which need to be analyzed and then connected their knot with the origin of UCD. Following areas of the paper is:

**Historical Background and the Origin of UCD, Mainstream Universities versus Emerging of Ideas of Alternative Universities, Visioning of UCD, Academic Programs of UCD, Developing a Five-Year Strategic Plan of UCD, Governance System of UCD.**

Foundation paper was completed and submitted to the management of UCD on 30<sup>th</sup> of March 2022, the paper has been thoroughly reviewed by the management, and after the detailed analyzation, it has been advanced towards its second phase, where the structure of the alternative university has been designed refereeing according to the paper.

### 4. Community Leadership and Entrepreneurship Program.

This program is intended to initiate some of the very significant features and concerns IDSP has been confronting from the last few years with their operational program of girl's education. The foremost reason behind conducting this program is that, firstly, UCD.

has been situated within the Hanna Urak Community, whereby, UCD's vision is to work on the communities of Balochistan, and to create the critical pedagogy among the people and to give them the tools, with help of which they will choose their paths. For that reason, UCD's first responsibility is to work on the

community, with whom UCD has been living for around 15 years. Therefore, UCD takes this reason as its prior responsibility to give proper attention to the Hanna Urak community, where UCD will plan to choose to work with the youth of the Hanna community, so then their youth will be beneficial for their communities and peoples. The second concern of UCD is to create trustworthy relationships with the Hanna local communities, which is the very basic step every community or person needs to fulfill before getting engaged with others. UCD needs the Hanna Urak community to assist UCD in all the aspects of the region, so then both sides would benefit equally.

Third reason behind working with Hanna community is to know the youth of the community, what are their intentions regarding their communities, what kind of plans they must boost their communities, what are the measurements of their sincerity and commitments toward their people. This youth will become the human resource of the Hanna Urak community to accumulate and work on their histories, their economic resources, the community tradition, cultures and other similar practices, their geographies connectively changing with world perspective and context.

All these questions will be answered after getting engaged with the community youth. As we know, youth has been considered a strength of every nation and society.

Whereas future with are those communities who have taught and instilled their youth according to community requirements.

## **2. Lions Clubs Pakistan**

Lions Clubs Pakistan is well-known charity program in Pakistan working as a social welfare organization. The basic motive of Lions Clubs Pakistan is to help the community by raising funds, providing facilities in different areas of life. Our mission is to empower volunteers to serve their communities, meet humanitarian needs, encourage peace, and promote international understanding through Lions clubs.

### **DETAILS**

We serve in different areas of life, Food & Hunger, Water, Climate change, Education, Health, Youth & Women and many others areas of human need. We work in groups that can join together for the better efforts to solve the issues of the community. Currently Pakistan is dealing with several issues and we are supporting Pakistani Nation by providing different charity services and helping them in resolving these issues

#### **Climate Change**

The effects of climate change and global warming on Pakistan, the melting of glaciers in the Himalayas,

threatening the volumetric flow rate of many of the most important rivers of Pakistan. In Pakistan, such effects are projected to impact millions of lives. As the result of ongoing climate change, the climate of Pakistan has become increasingly volatile over the past several decades; this trend is expected to continue. Be A Lion to contribute in spreading awareness about the climate change.

#### **Education**

Education is the most powerful weapon which you can use to change the world. (Nelson Mandela). Unfortunately, Pakistan literacy rate is below the standard. School building and furniture are among the major causes of lack of education in Pakistan. Be A Lion to raise Pakistan among the top nation in the world through serving education sector in Pakistan.

#### **Health**

Health is Wealth. The increasing rate of health issues in Pakistan is alarming. These health issues are leading to new kind of diseases that are difficult to treat because of lack of finances and economic conditions. Be A Lion and roar your way to facilitate those who can't afford quality health care.

#### **Food & Hunger**

Food & Hunger is one of the major issues in Pakistan. According to Global Food Security Index Pakistan ranked 77th out of total 109. In Pakistan food insecurity really worse, i.e 6 out of 10 people is below food security line. Be A Lion today to provide food to thousands of Pakistanis and eradicate hunger from the society.

#### **Peace and Harmony**

Peace is something that enables people to live a better life. Pakistan is a country that faces huge peace and harmony issues in the last few years. Be A Lion to highlight the importance of promoting the culture of peace and harmony in Pakistan.

#### **Society Development**

To bring about economic growth and social change, Women and Youth empowerment is an important concern now a day. They are also an important element of a country's population. Be A Lion to support the entrepreneurial and leadership capacity of women and youth in Pakistan.

#### **Water**

Water is life and life is precious. Without water, life is not possible and in Pakistan people are facing problems for getting pure drinking water. According to Water Crisis Index, Pakistan ranked third among the countries facing water crisis. Be A Lion to save water and facilitate people with pure drinking water to save lives.

### **3. Madat Balochistan**

**Madat Balochistan** is a charity Organization in Balochistan working as a social welfare organization that is registered under Balochistan charities Registration and regulation Authority. The basic motive of Madat Balochistan is to help the community by raising funds, providing facilities in different areas of life in Balochistan.

### **4. Alkhidmat Foundation Pakistan**

Alkhidmat Foundation Pakistan is one of the leading, non-profit organizations, fully dedicated to humanitarian services since 1990. Alkhidmat's workers and volunteers continue to work tirelessly for the relief of affected people across Pakistan and worldwide. Our dedicated services include disaster management, health services, education, orphan care, clean water, Mawakhat (interest-free loan) and other community services.

#### **Our Seven Services Areas**

##### **Disaster Management**

During Floods-2022 thousands of volunteers of Alkhidmat took part in relief and rescue work, using rescue vehicles, ambulances and motorboats in the flood-affected areas across the country. Alkhidmat Disaster teams and volunteers supplied thousands of affected families with shelter in Alkhidmat Tent Villages, cooked-food at Alkhidmat Kitchens, dry ration by boats, clean drinking water by Mobile Water Filtration Plants, medical aid by Mobile Health Units and education by Temporary Learning Centers across the country. 6 field hospitals were established in the affected areas, where along with general medical check-up, day care service, labor room for maternity and free medicines were also provided. Besides, hygiene kits, containing soap, toothbrushes, toothpaste, cups, first aid medicines, water purification medicine, and sanitary pads for women were also distributed.

##### **Health Services**

The World Health Organization (WHO) has enlisted Pakistan among 57 countries with critical health workforce deficiency while the country is placed at 122nd position in terms of quality of healthcare facilities. Unfortunately, Pakistan stands high in the list of top countries with extreme infant mortality.

Being conscious of the situation, Alkhidmat Health Foundation has established a countrywide network to provide best healthcare facilities to the public, irrespective of their socio-economic status. Several Hospitals, Clinics / Dispensaries, Diagnostic Centers and Blood Banks, Mobile Medical Camps and Ambulances are functional effectively across the country including landmark projects in the remote and

under-developed areas such as Tharparkar (Sindh) and Quetta (Baluchistan).

##### **Education**

Education is the only solution for humanity to prosper. With an aim to help every child to get an education, Alkhidmat Foundation Pakistan has taken lead among all its competitors by providing education through free schooling and rehabilitation support to the poor and needy children. Alkhidmat's helpful undertakings encircle all matters and issues related to education in Pakistan.

##### **Clean Water**

Alkhidmat Foundation Pakistan is practically active to ensure the provision of clean drinking water by installing hand-pumps in arid lands, drilling water-wells in remote water-scarce areas, installing water-filtration plants in cities, and supplying water to homes in villages through its water schemes. Alkhidmat Clean Water Program takes every possible measure according to the needs of the water-scarce regions to implement its mission.

##### **Orphan care**

This financial support includes school fees and an allowance on a quarterly basis along with regular provision of an educational kit which includes school bag, curriculum books, stationery, seasonal uniforms and shoes. Additionally, Child Character

Development Program has also been designed for moral and social growth of the sponsored children.

For selection of the orphan children to be sponsored under the OFSP, Alkhidmat Foundation Pakistan relies on the network of its volunteers which is effectively operational in all 135 districts of Pakistan. These volunteers identify potential candidates and refer them to our Family Support Organizers (FSOs). The FSOs assess all the referred children through personal visits and other means to prepare their cases along with required additional documentation to forward them to regional offices for further verification. The regional offices verify the authenticity of provided documents and assess the cases on need-based criteria through a local team of volunteers and the community members. Later on, all the forwarded cases are discussed individually and approved for database entry where they are offered to the donors for funding.

##### **Mawakhat**

Alkhidmat Mawakhat Program was initiated with the objective of providing interest-free microcredit to the poor and needy to help them start a business, earn a respectable income and improve their standard of living. Alkhidmat Mawakhat program is dedicated to improving the lives of the poor; those who are financially unstable and are in seek of an opportunity to find their way for a respectful earning. This program is truly based on the Islamic values that provide the poor with interest-free loans so that they may acquire a livelihood, skill to earn and support their needs to

reach their full potential. The program is based on the principle of Qarze-e-Hasna, helping someone in need with an interest-free loan.

All these organizations are registered charities in Pakistan and all have signed memorandum of understanding with APPS Europe. A strict record keeping by these organizations on distribution of kits was also agreed.

The criteria for providing birthing kits

- The kits were to be provided to the lady health workers who are-attending the pregnant women at home in order to assist their home deliveries.

- Any pregnant woman planning a home birth

- It was decided that the kits will not be distributed for use in the hospitals or maternity clinics.

### THE DEVASTATING FLOODS:

This project was well underway and the clean birthing kits were ready to be dispatched to the partner organizations of the APPS when the devastating floods hit Pakistan. After the estimates of lives lost, number of cattle and herd dead, crops destroyed and vast land under water was done a shocking reality also dawned through and that was the number of pregnant women displaced and stranded by this disaster.

There were an estimated 650,000 pregnant women in the flood-hit areas and 128,000 of them needed immediate assistance as 42,000 of them would be giving birth in three months. These numbers are taken from an official statement (Reference 8)

There is a simple statistical formula applied to know the probable number of pregnancies from which the probable number of deliveries can also be calculated. Usually, 15 per cent of pregnancies are high-risk, requiring special care. These numbers were estimated, as in Pakistan there is lack of a digitalized real-time health information system. (Reference 9)

In Sindh alone, over 1,000 health facilities are fully or partially destroyed, and a further 198 facilities have been destroyed in areas of Balochistan. Damage to infrastructure, including roads and key emergency routes, has further limited women’s access to healthcare services. (Reference 10)

### APPS Response:

Our team immediately did an assessment of the worst hit areas and contacted our partner organizations. Our partners who had footprint on the ground were ready to take on the huge geographical challenges. The land had turned into swathes of water and the only way to reach communities was through boats which were scarce. The community midwives who were supposed to help in the project were themselves without homes and struggling to keep their families safe. The logistical challenge of taking the kits from storage in the large city of Karachi to these far flung areas was also very huge with added costs.

The kits distribution project also had to face many cultural issues as the displaced families did not allow strangers to deliver their women. The trusted midwives were displaced themselves and the women had to be helped into makeshift tents.

### Coordinating issues

The teams had to coordinate from the point of mobilizing the kits from the area that they were assembled and then to arrange transport in a very difficult terrain due to the floods. The three organizations then made sure that the kits were given to the midwives who were trained to use the six items and then after the home delivery they provided with the statistics of the home birth. In this report, we present data on the use of these CBKs in Baluchistan.





## Methods:

The 5000 CBKs were distributed to different organizations in Baluchistan, Pakistan, with a focus on reaching women in far-flung, flood-affected areas. Data on the use of CBKs were collected from the organizations that received the kits, including information on antenatal care visits, postnatal care visits, and gestational age at delivery, birth outcomes, and complications. Due to the devastating floods in Pakistan we are having great difficulty in collecting the data. <sup>3</sup>

The birth attendants did not have internet connections and the access roads are still flooded.

Data were collected from 1000 patients who received CBKs during delivery in different organizations in Baluchistan. The data were collected from June 2022 to February 2023. Information was collected on the number of antenatal care (ANC) visits, postnatal care (PNC) visits, gestational age at delivery, birth outcome, birth weight, and any complications during and after deliver. A total of 1000 cases were reported on the use of CBKs in Baluchistan. The following are the outcomes for each indicator:

We have distributed 5000 clean birthing kits to pregnant women in Baluchistan who have planned to have a baby at home. These kits were distributed under extreme conditions of poor infrastructure, torrential floods and lack of telecommunication and roads.

We have received feedback from the community midwives of 1000 successful births with the use of these kits. We have relied upon interviews of the midwives and evidence of delivery though photos and videos taken of the newborn. There were 0.8% reported cases of post-partum hemorrhage and no newborn sepsis in the feedback.

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**The following results were obtained from the analysis of the data:**

| Outcome                               | Frequency | Percentage |
|---------------------------------------|-----------|------------|
| Less than 4 ANC visits                | 426       | 42.6%      |
| 4 or more ANC visits                  | 574       | 57.4%      |
| PNC visits                            | 618       | 61.8%      |
| Gestational Age at Delivery <37 weeks | 236       | 23.6%      |
| Gestational Age at Delivery >37 weeks | 764       | 76.4%      |
| Live Birth Outcome                    | 913       | 91.3%      |
| Still Birth/IUD                       | 87        | 8.7%       |
| Birth Weight <2.5kg                   | 187       | 18.7%      |
| Birth Weight >2.5kg                   | 813       | 81.3%      |
| PPH                                   | 8         | 0.8%       |
| Difficult using CBK                   | 0         | 0%         |
| Expired medication item               | 0         | 0%         |
| Difficult using CBK                   | 0         | 0%         |
| Expired medication item               | 0         | 0%         |

## Analysis:

The distribution of outcomes by % for 1000 births using clean birthing kits is shown in the table above. Most women (57.4%) had 4 or more ANC visits, and most (76.4%) gave birth at term (>37 weeks gestational age). The percentage of live births was high (91.3%), while 8.7% of births resulted in stillbirth or an IUD. 81.3% of births had a birth weight over 2.5 kg, whereas 18.7% of deliveries had a birth weight under 2.5 kg. There were only 0.8% of women who had PPH, and there were no problems utilizing the CBK or expired pharmaceutical products. According to the findings, providing clean birthing kits is linked to better results for both maternal and neonatal health. There are still certain areas of concern, such as the relatively high percentage of women giving birth before 37 weeks of pregnancy and the percentage of women giving birth to infants weighing less than 2.5 kilograms. More work is required to monitor the caliber of care given during childbirth and to make sure that clean birthing kits are given to women who are most at risk of negative outcomes. Strategies to promote ANC visits

may also help to further advance maternal and neonatal health outcomes.

We are still in the process of collecting data from the midwives although it is exceedingly difficult to get all the record of the use of the clean birthing kit.

## Discussion:

The data collected from the use of CBKs in Baluchistan suggest that the use of these kits has a positive impact on maternal and neonatal health outcomes. The majority of women who received CBKs had at least four ANC visits, which is an important indicator of improved maternal health. The high number of live births and absence of complications such as postpartum hemorrhage and cord infection indicates the efficacy of CBKs in improving neonatal health outcomes.

## Conclusion:

The distribution of 5000 CBKs in Baluchistan has shown promising outcomes with no reported cases of complications related to childbirth or the use of CBKs. However, efforts to improve access to and utilization of antenatal care services should continue to ensure optimal maternal and child health outcomes in the region. Further research is needed to explore the proportion of preterm births and low birth weight infants among those who received CBKs.

## Acknowledgment:

I would like to thank Scientist Tahir Mahmood from Norway to providing us the Platform of Norwegian Resource Centre – Research & Development Desk to conduct this research through APPS Europe.

## Abbreviations

ANC: Antenatal Checkups; APH: Ante partum Hemorrhage; ANC: Antenatal Care; PNC: Postnatal checkups; MPDSR: Maternal Perinatal Death Surveillance and response; POG: Period of Gestation; PPH: Postpartum Hemorrhage; SDG: Sustainable Development Goals.

## Author's contributions

SS: conceptualization, methodology, data collection, analysis, manuscript writing. : result analysis, manuscript writing and editing. All authors read and approved the final manuscript.

## Funding:

Funded by APPS Global Sub Organization's

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